

What is claimed is:

- 1 1. A retention mechanism for mounting an integrated circuit package to a
2 circuit board, comprising:
3 a dish-shaped, elastically deformable pressure plate, having a first apex and a
4 first periphery spaced away from the first apex, the pressure plate
5 being deformable by applying a first force to the first periphery
6 directed generally towards the first apex;
7 a dish-shaped, elastically deformable backing plate, having a second apex
8 and a second periphery spaced away from the second apex, the
9 backing plate being deformable by applying a second force to the
10 second periphery directed generally towards the second apex; and
11 means for simultaneously applying the first and second deforming forces to
12 the first and second peripheries to engage the first apex with a surface
13 of the integrated circuit package and the second apex with a surface
14 of the circuit board so as to effect continuous electrical continuity
15 between the integrated circuit package and the circuit board.
- 1 2. The retention mechanism of claim 1 wherein an average contact resistance
2 between the integrated circuit package and the circuit board is less than
3 about 50 milliohms.
- 1 3. The retention mechanism of claim 2 wherein the average contact resistance
2 is about 13 milliohms.
- 1 4. The retention mechanism of claim 1 further comprising an elastically
2 deformable gasket positioned between the pressure plate and the integrated
3 circuit package.

- 1 5. The retention mechanism of claim 4 wherein one or more of the pressure
2 plate, the backing plate, or the gasket define one or more windows to expose
3 one or more selected portions of the plates or the circuit board.
- 1 6. The retention mechanism of claim 4 wherein the gasket has a height less
2 than about 2 millimeters.
- 1 7. The retention mechanism of claim 6 wherein the gasket has a height less
2 than about 1 millimeter.
- 1 8. The retention mechanism of claim 1 wherein the plates are made from a
2 material selected from the group consisting of beryllium copper and steel.
- 1 9. The retention mechanism of claim 1 wherein one or more of the first and
2 second peripheries is fractal-shaped.
- 1 10. The retention mechanism of claim 1 wherein the backing plate is in contact
2 with a circuit board having a back side and the fractal-shaped periphery to
3 enable a plurality of components to be attached to the back side of the circuit
4 board, after the integrated circuit package has been mounted to the circuit
5 board.
- 1 11. A retention mechanism comprising:
2 a paraboloid, elastically deformable pressure plate, having a concave surface,
3 a convex surface, a summit, and a periphery spaced away from the
4 summit, the pressure plate being deformable by applying a first force
5 to the periphery directed generally towards the summit;
6 an integrated circuit package having a top and a bottom surface, the convex
7 surface of the pressure plate being contactable by the top surface;
8 a circuit board having a top and a bottom surface, the bottom surface of the

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- 1 16. The retention mechanism of claim 11 wherein the summit of the pressure
2 plate is located on the convex surface of the pressure plate and the periphery
3 of the pressure plate is located on the concave surface of the pressure plate,
4 and the height from the summit of the pressure plate to the periphery of the
5 pressure plate is less than about 2 millimeters.
- 1 17. The retention mechanism of claim 16 wherein the height from the summit to
2 the periphery is less than about 1.5 millimeters.
- 1 18. The retention mechanism of claim 11 wherein the summit of the backing
2 plate is located on the concave surface of the backing plate and the periphery
3 of the backing plate is located on the convex surface of the backing plate,
4 and the height from the periphery to the summit is less than about 2
5 millimeters.
- 1 19. The retention mechanism of claim 18 wherein the height from the periphery
2 to the summit is less than about 1.5 millimeters.
- 1 20. The retention mechanism of claim 11 wherein the integrated circuit package
2 includes an organic land grid array.
- 1 21. The retention mechanism of claim 11 wherein the integrated circuit package
2 includes a flip chip pin grid array.
- 1 22. The retention mechanism of claim 11 further comprising a heat sink in
2 contact with the concave surface of the pressure plate.
- 1 23. An electronic assembly comprising:
2 a paraboloid, elastically deformable pressure plate, having a concave surface,
3 a convex surface, a summit, and a periphery spaced away from the

1 26. A method of testing a retention mechanism comprising:
2 creating a daisy chain from a circuit board through a connector into a
3 integrated circuit package to a die and back to the circuit board; and
4 measuring resistance between the die and the circuit board.

1 27. The method of testing of claim 26 further comprising:
2 determining the contribution of the connector to the total resistance; and
3 determining the extent of contact between the connector and the integrated
4 circuit package.

1 28. The method of testing of claim 26 further comprising:
2 measuring the resistance between the integrated circuit package and the
3 circuit board.

1 29. A method of assembling an electronics assembly comprising:
2 placing an integrated circuit package on a circuit board;
3 placing a slightly curved pressure plate on a top surface of the integrated
4 circuit package;
5 placing a slightly curved backing plate on a bottom surface of the circuit
6 board; and
7 applying force to outer edges of the plates to retain the integrated circuit
8 package on the circuit board and to create an evenly distributed
9 pressure across conductors of the integrated circuit package.

1 30. The method of claim 29 further comprising:
2 placing a heat sink on the slightly curved pressure plate; and
3 attaching the heat sink to the circuit board.

1 31. The method of claim 29 further comprising placing a gasket between the
2 integrated circuit package and the slightly curved pressure plate.